

Remarks

Support for the above-requested amendments to claim 16 is found at least on page 3, lines 7-8, page 4, lines 4-23, page 7, lines 8-12, and page 10, lines 6-7 and 14-20. Support for the amendments to claim 33 is found at least in on page 3, lines 25-30 and the paragraph bridging pages 6 and 7. New claim 38 is supported at least by page 3, lines 15-20, page 10, lines 24-26, and page 13, lines 10-24. Support for new claim 39 is found at least at page 3, lines 25-29. New claim 40 is supported at least by page 3, lines 7-8 and page 10, lines 14-20. Support for new claim 41 is found at least on page 4, lines 30-33. Support for new claim 42 is found at least on page 2, lines 32-33. New claim 43 is supported at least by page 6, lines 15-18. Support for new claim 44 is found at least in the paragraph bridging pages 7 and 8. Claims 17 and 23-30 have been canceled without prejudice. Claims 1-15 were canceled without prejudice in a previous Amendment.

Claims 16, 18-22 and 31-44 are before the Examiner for consideration.

Formal Matter

As shown above, Applicants have added new claims 38-44 by amendment (*i.e.*, seven claims). Additionally, claims 1-15, 17, and 23-30 have been canceled without prejudice. Because the total number of claims Applicants are submitting for examination (*i.e.*, twenty claims) is not greater than the total number of claims previously presented and paid for (*i.e.*, twenty claims), Applicants respectfully submit that no additional filing fees are required for newly added claims 38-44.

In addition, Applicants respectfully submit that there are no fees required for new independent claim 38 because the total number of independent claims present in the application (*i.e.*, three independent claims) does not exceed the total amount of independent claims permitted without incurring additional fees (*i.e.*, three independent claims). Furthermore, because support for newly added claims 38-44 is found throughout the specification, as identified in the opening paragraph of the Remarks, Applicants respectfully submit that these newly added claims do not contain any new matter.

Rejection Under 35 U.S.C. §102(b)

Claims 16, 19-22, 31, and 32 have been rejected under 35 U.S.C. §102(b) as being anticipated by German Patent No. 119852159 to Formann, *et al.* ("DE '159"). In particular, the Examiner asserts that DE '159 teaches that a hybrid yarn (*e.g.*, 50% propylene and 50%

natural fiber) was fed into an extrusion device where it was subjected to heat within the extrusion nozzle. It is asserted that the extrusion device supplies molten plastic to the commingled filaments. Additionally, the Examiner asserts that after being further provided with the thermoplastic material, the commingled and heated filaments were subjected to a winding operation wherein the formed band was wound upon a mandrel.

In response to this rejection, Applicants respectfully direct the Examiner's attention to independent claim 16 and submit that claim 16 defines a method for manufacturing a body of revolution that is not taught within DE '159. In particular, it is respectfully submitted that DE '159 does not teach (or suggest) that the first composite strip is formed of intimately mingled continuous strands formed of glass filaments and filaments of organic thermoplastic as claimed in amended claim 16. Indeed, DE '159 is silent with respect to any teaching (or suggestion) of intimately mingled continuous strands of glass filaments and organic filaments. In order for a reference to be anticipatory, each and every element of the claimed invention must be found within the four corners of the cited reference. Because DE '159 does not teach (or suggest) the utilization of a composite strip formed of continuous strands of glass filaments and organic thermoplastic filaments as required by claim 16, Applicants submit that DE '159 is not an anticipatory reference. Accordingly, Applicants respectfully submit that independent claim 16 is not anticipated by DE '159.

Additionally, Applicants have amended claim 16 to include the features of claim 17, which was not included in this rejection. Accordingly, Applicants submit that claim 16 is patentable for this additional reason.

In view of the above, Applicants submit that claims 16, 19-22, 31, and 32 are not anticipated by DE '159 and respectfully request that this rejection be reconsidered and withdrawn.

Rejection under 35 U.S.C. §103(a)

Claims 16-22, 31, and 32 have been rejected under 35 U.S.C. §103(a) as being obvious over German Patent No. 119852159 to Formann, *et al.* ("DE '159 in view the internet publication dated July 30, 2001, from the website <http://www.twintex.com/fabrication-processes/tw-process.html> ("Saint Gobain"). In particular, the Examiner asserts that DE '159 teaches that a hybrid yarn (e.g., 50% propylene and 50% natural fiber) was fed into an extrusion device where it was subjected to heat within the extrusion nozzle. It is asserted that the extrusion device supplies molten plastic to the commingled filaments. Additionally, the

Examiner asserts that after being further provided with the thermoplastic material, the commingled and heated filaments were subjected to a winding operation wherein the formed band was wound upon a mandrel. The Examiner admits that DE '159 does not teach filament winding the product. However, it is asserted that DE '159 suggests filament winding subsequent to the extrusion operation. The Examiner concludes that it would have been obvious to one of skill in the art to utilize the techniques of Saint Gobain in the process of DE '159 to filament wind with a glass reinforcing fiber and a polypropylene blend. With respect to claim 17, the Examiner asserts that Saint Gobain teaches a strip formed from glass and polypropylene filaments comingled together.

Applicants' Response

Initially, Applicants submit that claim 17 has been canceled without prejudice, thereby rendering the rejection of this claim moot.

In response to the rejection of the remaining claims, Applicants respectfully direct the Examiner's attention to independent claim 16 and submit that claim 16 defines a method for manufacturing a body of revolution that is not taught within DE '159 and Saint Gobain. In addition, Applicants submit that DE '159 and Saint Gobain fail to teach the combination of features recited in claim 16.

Applicants submit that DE '159 and Saint Gobain do not teach or suggest a method for manufacturing a body of revolution that includes (1) introducing at least one first heated composite strip formed of intimately mingled continuous strands formed of glass filaments and filaments of organic thermoplastic into at least one die, (2) simultaneously feeding at least one molten material into the die to obtain at least one second composite strip, where the second composite strip is formed of the second material reinforced with the at least one first composite strip, and (3) winding the second composite strip around a support rotating about its axis, where an amount of molten material deposited on one side of the first strip is greater than an amount of molten material deposited on a second side of the first strip.

Applicants respectfully submit that DE '159 and Saint Gobain, alone or in combination, do not teach or suggest an off-centering of the reinforcing material within the second composite strip as is required by claim 16. Indeed, both DE '159 and Saint Gobain are silent with respect to any teaching or suggestion of a first composite strip where an amount of molten material deposited on one side of the first composite strip is greater than an amount of molten material deposited on a second side of the first composite strip. Accordingly, Applicants submit that the combination of DE '159 and Saint Gobain would not

result in the method claimed in claim 16 where an amount of molten material deposited on one side of the first strip is greater than an amount of molten material deposited on a second side of the first strip as claimed in claim 16. Therefore, Applicants submit that claim 16 is non-obvious and patentable.

In addition, Applicants submit that there is no motivation for one of skill in the art to arrive at the method claimed in claim 16 based on DE '159 and/or Saint Gobain. To establish a *prima facie* case of obviousness, there must be some motivation, either within the reference or in the knowledge of those of skill in the art, to modify the reference or combine the references' teachings, there must be a reasonable expectation of success, and the prior art references must meet all of the claim limitations. (See, e.g., *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 6, August 2007, §2142). It is respectfully submitted that one of ordinary skill in the art would have no motivation to arrive at a method for manufacturing a body of revolution that includes (1) introducing at least one first heated composite strip into at least one die, (2) simultaneously feeding at least one molten material into the die to obtain at least one second composite strip, and (3) winding the second composite strip around a support rotating about its axis, where an amount of molten material deposited on one side of the first strip is greater than an amount of molten material deposited on a second side of the first strip based on the teachings of DE '159 and Saint Gobain because neither DE '159 nor Saint Gobain, alone or in combination, teaches or suggests a first composite strip where an amount of molten material deposited on one side of the first composite strip is greater than an amount of molten material deposited on a second side of the first composite strip. Consequently, one of ordinary skill in the art would have no motivation to off-center the reinforcing material within the second composite strip based on the teachings of DE '159 and/or Saint Gobain. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

Also, as discussed above, DE '159 and Saint Gobain do not teach or suggest a first composite strip where an amount of molten material deposited on one side of the first composite strip is greater than an amount of molten material deposited on a second side of the first composite strip. Therefore, Applicants respectfully submit that DE '159 and Saint Gobain, alone or in combination, fail to teach all of the claim limitations set forth in claim 16. Accordingly, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

In view of the above, it is respectfully submitted that independent claim 16 is not taught or suggested by DE '159 and Saint Gobain, either alone or in combination, and that claim 16 is therefore non-obvious and patentable. With respect to dependent claims 18-22, 31, and 32, Applicants submit that because independent claim 16 is not taught or suggested by DE '159 and Saint Gobain and claims 18-22, 31, and 32 are dependent upon claim 16 and contain the same elements as claim 16, dependent claims 18-22, 31, and 32 are also not taught or suggested by DE '159 and/or Saint Gobain.

Accordingly, Applicants respectfully submit that claims 16, 18-22, 31, and 32 are not obvious over DE '159 and Saint Gobain and respectfully request reconsideration and withdrawal of this rejection.

Rejection under 35 U.S.C. §103(a)

Claims 33-37 have been rejected under 35 U.S.C. §103(a) as being obvious over German Patent No. 119852159 to Formann, *et al.* ("DE '159") in view of the internet publication dated July 30, 2001, from the website <http://www.twintex.com/fabrication-processes/tw-process.html> ("Saint Gobain") and further in view of WO 00/47397 to Ian Gray ("Gray"). The Examiner asserts that DE '159 teaches that a hybrid yarn (e.g., 50% propylene and 50% natural fiber) was fed into an extrusion device where it was subjected to heat within the extrusion nozzle. It is asserted that the extrusion device supplies molten plastic to the commingled filaments. Additionally, the Examiner asserts that after being further provided with the thermoplastic material, the commingled and heated filaments were subjected to a winding operation wherein the formed band was wound upon a mandrel.

The Examiner admits that DE '159 does not teach filament winding the product. However, it is asserted that DE '159 suggests filament winding subsequent to the extrusion process. The Examiner concludes that it would have been obvious to one of skill in the art to utilize the techniques of Saint Gobain in the process of DE '159 to filament wind with a glass reinforcing fiber and a polypropylene blend. With respect to claim 17, the Examiner asserts that Saint Gobain teaches a strip formed from glass and polypropylene filaments comingled together.

The Examiner also admits that the combination of DE '159 and Saint Gobain does not teach a non-uniform cross-section. The Examiner asserts that an artisan would be well aware that in pultrusion it was known to vary the shape at the exit of the die in order to change the cross-sectional shape of the end product while altering reinforcement percentage along the

length of the product. It is asserted that by increasing the cross-sectional shape at the exit, the material of molten material supplied at the exit must be greater and the reinforcement percentage would decline in the cross-sectional portion as more resin was added. It is asserted that the only other way to achieve constant reinforcement while varying the molten material added would have been to provide reinforcement with resin rich regions and resin starved regions at the exit of the die. The Examiner states that this does not seem to be what Applicants desire to perform.

Gray is cited for assertedly teaching that it was known in the art to vary the amount of reinforcement in the finished cross-section by varying the shape of the material at the exit of the die. The Examiner asserts that the amount of resin added in the pultruded product in the cross-section increases and decreases as the size of the die is increased and decreased while the amount of reinforcement fed through the die remains constant. The Examiner concludes that it would have been obvious to one of skill in the art to employ a variable die capable of changing the cross-sectional shape in a pultrusion die which would mandate that one increase the molten material as the die exit size is increased and to reduce the amount of molten material when the die exit size decreases to prevent excess run-off of the resin out of the die.

Applicants' Response

In response to this rejection, Applicants respectfully direct the Examiner's attention to independent claim 33 and submit that claim 33 defines a method for manufacturing a body of revolution that is not taught within DE '159, Saint Gobain, and Gray. In addition, Applicants submit that DE '159, Saint Gobain, and Gray fail to teach the combination of features recited in claim 33.

Namely, Applicants submit that none of DE '159, Saint Gobain, or Gray teaches or suggests a method for manufacturing a body of revolution that includes (1) heating a first composite strip containing a first wt % amount of reinforcing material, (2) simultaneously providing the heated first composite strip and a molten material to a die to form a second composite strip containing a second wt % amount of reinforcing material, (3) varying the amount of molten material provided to the die in-line to vary the second wt % amount of reinforcing material contained in the second composite strip, and (4) then depositing the second composite strip around a support rotating about its axis, where the second wt % amount of reinforcing material is varied along the length of the rotating support.

Applicants respectfully submit that DE '159, Saint Gobain, and Gray, alone or in combination, do not teach or suggest varying the amount of molten material provided to the

die in-line to vary the second wt % amount of reinforcing material contained in the second composite strip where the second wt % amount of reinforcing material is varied along the length of the rotating support. DE '159 and Saint Gobain are silent with respect to any teaching or suggestion whatsoever of varying the amount of molten material contained in the second composite strip or of varying the percent amount of reinforcing material along the length of the rotating support.

In the outstanding Office Action, the Examiner asserts that in order to keep the amount of reinforcement constant while varying the molten material, the cross-sectional shape of the die must change. (*See, e.g.*, page 3, lines 10-13 of the Office Action dated December 3, 2008). Additionally, the Examiner asserts that Gray teaches that it was known at the time of the invention to vary the amount of reinforcement in the finished cross-section by varying the shape of the material at the exit of the die, and concludes that it would have been obvious to employ a variable die that was capable of changing the cross-sectional shape, which, in turn, would mandate that one regulate the amount of molten material supplied to the die. (*See, e.g.*, page 4, lines 1-3 and 13-21 of the Office Action dated December 3, 2008). Specifically, the Examiner asserts that one of skill in the art would increase the molten material as the die exit size is increased and would reduce the amount of molten material when the die exit size decreases to prevent excess run-off of the resin out of the die. (*See, e.g.*, lines 14-18 of the Office Action of December 3, 2008).

Applicants acquiesce that Gray discusses the use of variable shape pultrusion dies. However, Gray specifically teaches that changes in cross-sectional shape for pultruded members are not easy to achieve. (*See, e.g.*, page 1, lines 11-14). Gray goes on to teach that variable shape pultrusion dies are being investigated, but such cross-sectional dies "will be complex and difficult to produce". (*See, e.g.*, page 1, lines 14-17). In addition, the reliability and/or longevity of these variable cross-sectional dies may be limited. (*See, e.g.*, lines 17-18). Gray clearly teaches that the variable shape dies may not be reliable and/or accurate. Applicants submit that one of skill reading Gray would have no reason or desire to use a variable cross-sectional die, as Gray does not describe any redeeming features of cross-sectional dies. Indeed, Gray specifically teaches the use of a different method to vary the strength characteristics along the length of the composite. It is respectfully submitted that Gray teaches away from the use of variable cross-sectional dies.

Applicants submit that Gray actually teaches varying the strength characteristics of the final product along its length by "drawing through a pultrusion die a series of reinforcing

fibres to form a pultruded fibre composite product characterized by incorporating in the reinforcing fibers prior to the pultrusion step additional fibres, which may have a characteristic such as tenacity of modulus different from that of the reinforcing fibers". (See, e.g., the paragraph bridging pages 1 and 2). Applicants respectfully submit that this method of Gray is vastly different from the method claimed in claim 33 in which the amount of molten material provided to the die is varied in-line to vary the second wt % amount of reinforcing material contained in the second composite strip and to vary the wt % amount of the reinforcing material along the length of the rotating support. Indeed, there is no teaching or suggestion within any of DE '159, Saint Gobain, or Gray of varying the amount of molten material provided to the die in-line to vary the second wt % amount of reinforcing material contained in the second composite strip as required in claim 33. Accordingly, Applicants submit that the combination of DE '159, Saint Gobain, and Gray would not result in the method claimed in claim 33. Thus, Applicants submit that claim 33 is non-obvious and patentable.

In addition, Applicants submit that there is no motivation for one of skill in the art to arrive at the method claimed in claim 33 based on DE '159, Saint Gobain, and/or Gray. As discussed above, to establish a *prima facie* case of obviousness, there must be some motivation, either within the reference or in the knowledge of those of skill in the art, to modify the reference or combine the references' teachings, there must be a reasonable expectation of success, and the prior art references must meet all of the claim limitations. (See, e.g., *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 6, August 2007, §2142). It is respectfully submitted that one of ordinary skill in the art would have no motivation to arrive at a method for manufacturing a body of revolution that includes (1) heating a first composite strip containing a first wt % amount of reinforcing material, (2) simultaneously providing the heated first composite strip and a molten material to a die to form a second composite strip containing a second wt % amount of reinforcing material, (3) varying the amount of molten material provided to the die in-line to vary the second wt % amount of reinforcing material contained in the second composite strip, and (4) then depositing the second composite strip around a support rotating about its axis, where the second wt % amount of reinforcing material is varied along the length of the rotating support based on the teachings of DE '159, Saint Gobain, and Gray because none of DE '159, Saint Gobain, and Gray, alone or in combination, teaches or suggests varying the amount of molten material provided to the die in-line to vary the second wt % amount of reinforcing material

contained in the second composite strip where the second wt % amount of reinforcing material is varied along the length of the rotating support. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

Also, as discussed above, DE '159, Saint Gobain, and Gray do not teach or suggest a step of varying the amount of molten material provided to the die in-line to vary the second wt % amount of reinforcing material contained in the second composite strip or where second wt % amount of reinforcing material is varied along the length of the rotating support as required by claim 33. Therefore, Applicants respectfully submit that DE '159, Saint Gobain, and Gray, alone or in combination, fail to teach all of the claim limitations set forth in claim 33. Accordingly, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

In view of the above, it is respectfully submitted that independent claim 33 is not taught or suggested by DE '159, Saint Gobain, and Gray, either alone or in any combination, and that claim 33 is therefore non-obvious and patentable. With respect to dependent claims 34-37, Applicants submit that because independent claim 33 is not taught or suggested by DE '159, Saint Gobain, and Gray and claims 34-37 are dependent upon claim 33 and contain the same elements as claim 33, dependent claims 34-37 are also not taught or suggested by DE '159, Saint Gobain, and/or Gray.

Accordingly, Applicants respectfully submit that claims 33-37 are not obvious over DE '159 in view of Saint Gobain and Gray and respectfully request that the Examiner reconsider and withdraw this rejection.

Rejection under 35 U.S.C. §112, first paragraph

Claims 33-37 have been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. In particular, the Examiner asserts that claims 33-37 claim that the amount of reinforcement remains constant while the amount of molten material supplied to the die is varied in order to vary the amount of reinforcement in the cross-section of the pultruded part. The Examiner asserts that there is no description for this processing. Specifically, it is asserted that Applicants have failed to recite that the amount of second material being added is varied while the amount of reinforcement remains constant to produce a product that has varied percent reinforcement along the length of the

product. Accordingly, the Examiner concludes that claims 33-37 contain subject matter not in Applicants' possession at the time the application was filed.

In response to this rejection, Applicants have amended claim 33 to remove the phrase "without varying the first amount of reinforcing material contained in the first composite strip". Applicants submit that as amended, claim 33 is sufficiently definite and respectfully request that this rejection be reconsidered and withdrawn.

Miscellaneous Matter

Applicants note that in the Patent and Trademark Office (PTO) website on the Patent Application Information Retrieval (PAIR) page for this application, the Appendix to the Amendment filed on August 12, 2008 has been incorrectly labeled as "Appendix to the Specification". Applicants did not, and do not, intend for the translated copy of DE '159 to become an attachment to the specification. Accordingly, Applicants respectfully request that this Appendix be correctly identified as an "Appendix to the Amendment" in order to avoid an inadvertent and incorrect addition to the specification.

Conclusion

In light of the above, Applicants believe that this application is now in condition for allowance and therefore request favorable consideration.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

If necessary, the Commissioner is hereby authorized to charge payment or credit any overpayment to Deposit Account No. 50-0568 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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